

POD Synthesis Analysis: Lessons Learned

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Outline

- Elements of Analysis
 - Population-level data
 - Chemistry
 - Toxicity
 - Histopathology
- Data Gathering and Filtering
- Conclusions

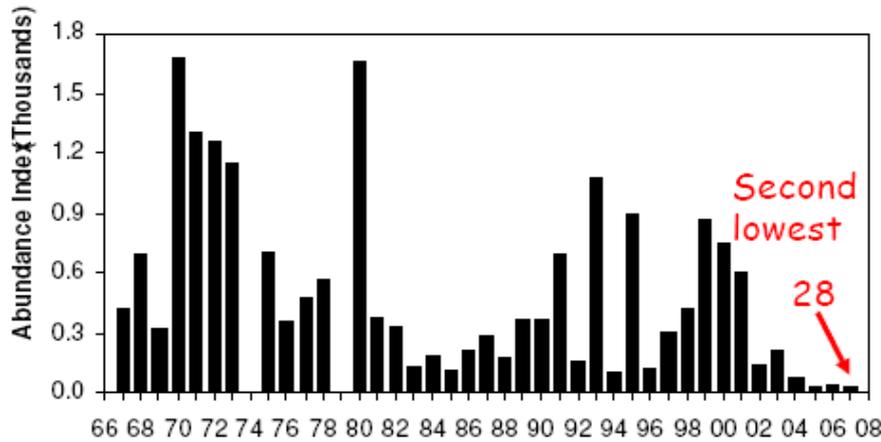
Elements - Populations

- Abundance data
- Consistent methodology
- Comparability
- Ease of analysis

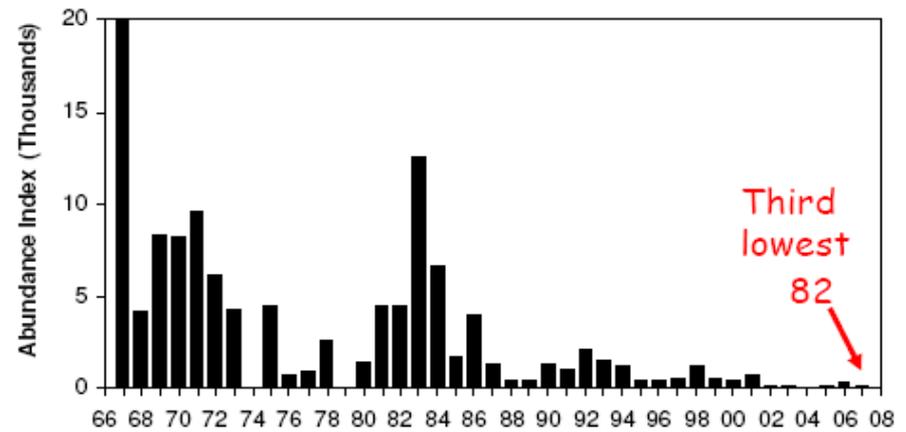
Fall abundance in 2007 continued to decline for all POD fishes.

Source: DFG 2007 Fall MW Trawl
No sampling 1974 and 1979

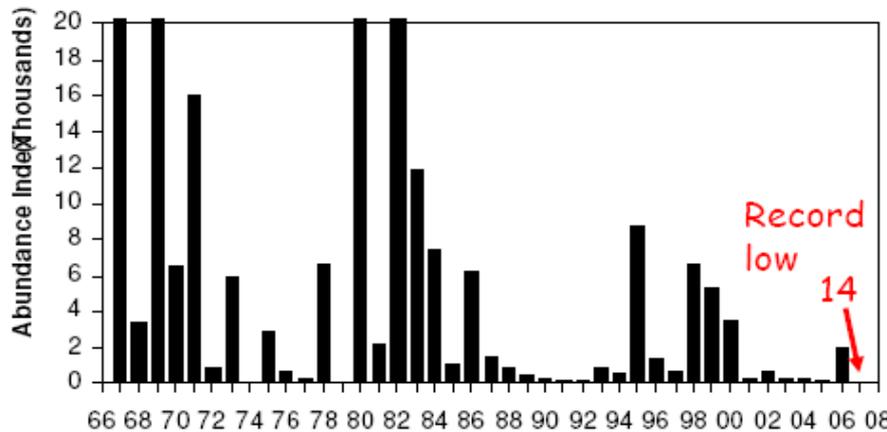
Delta Smelt



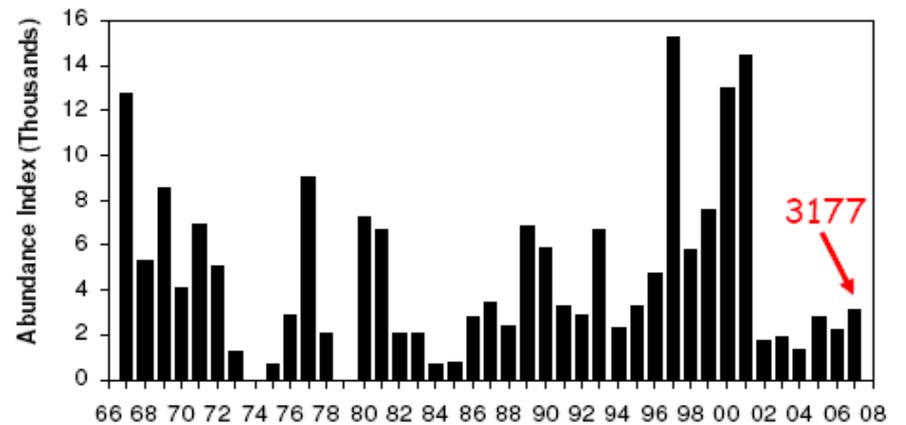
Striped Bass



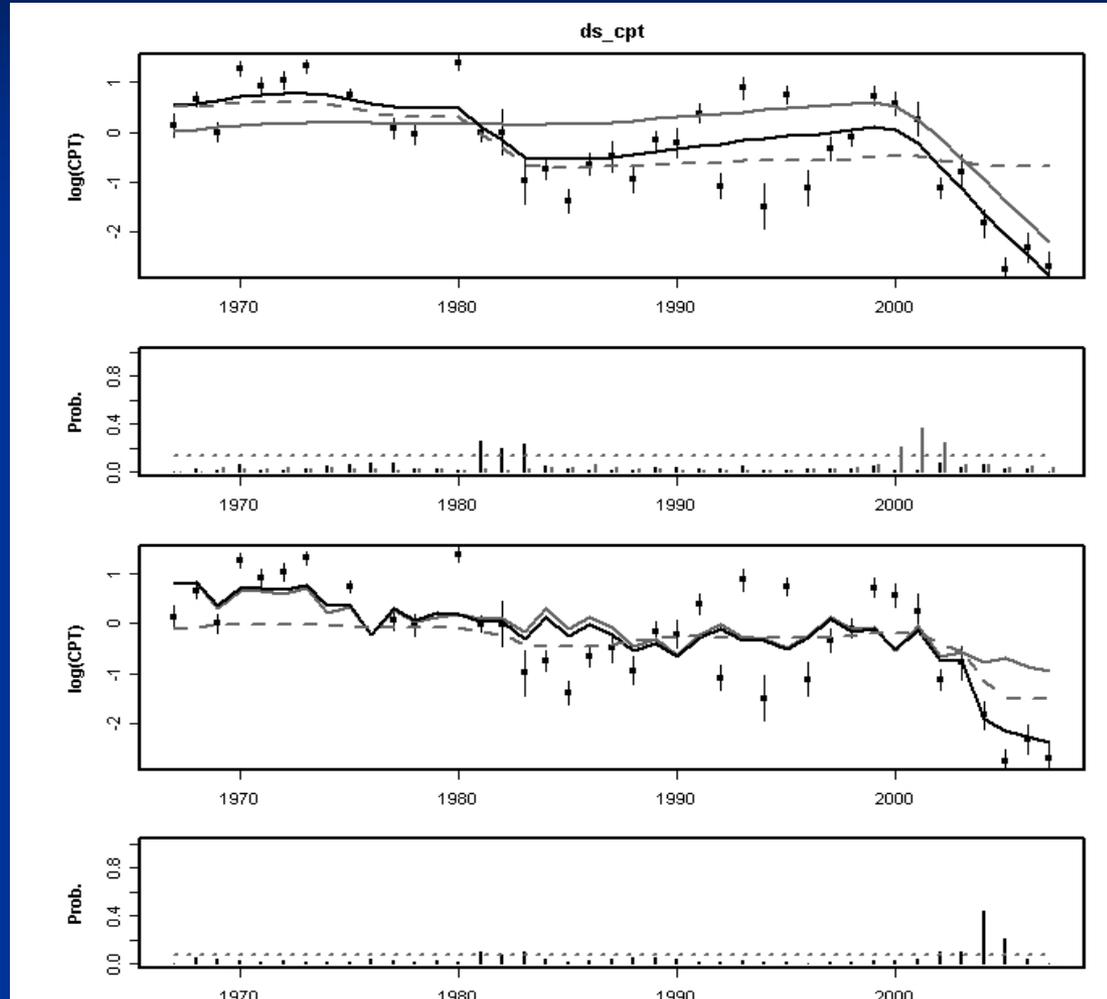
Longfin Smelt



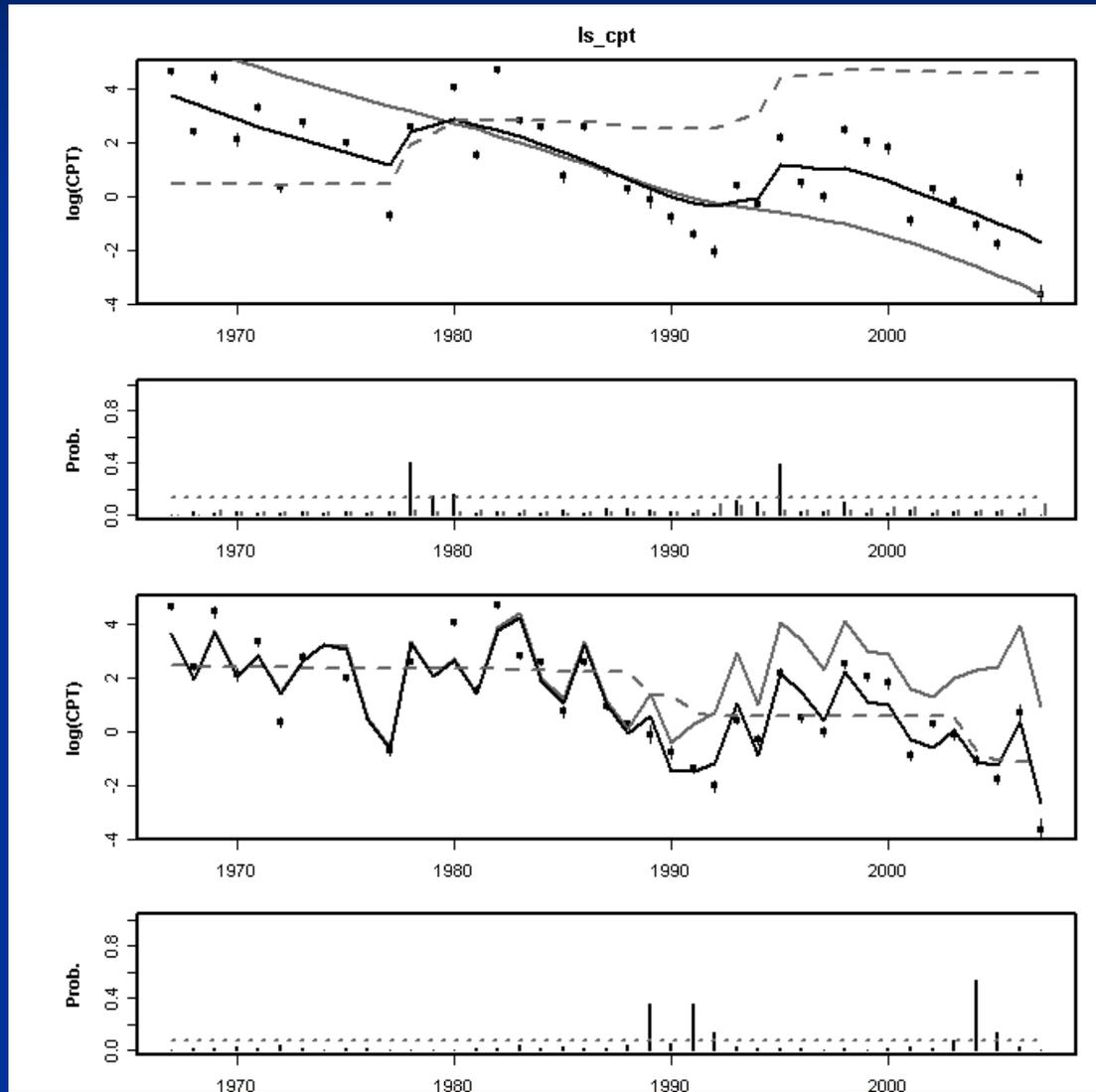
Thre adfin Shad



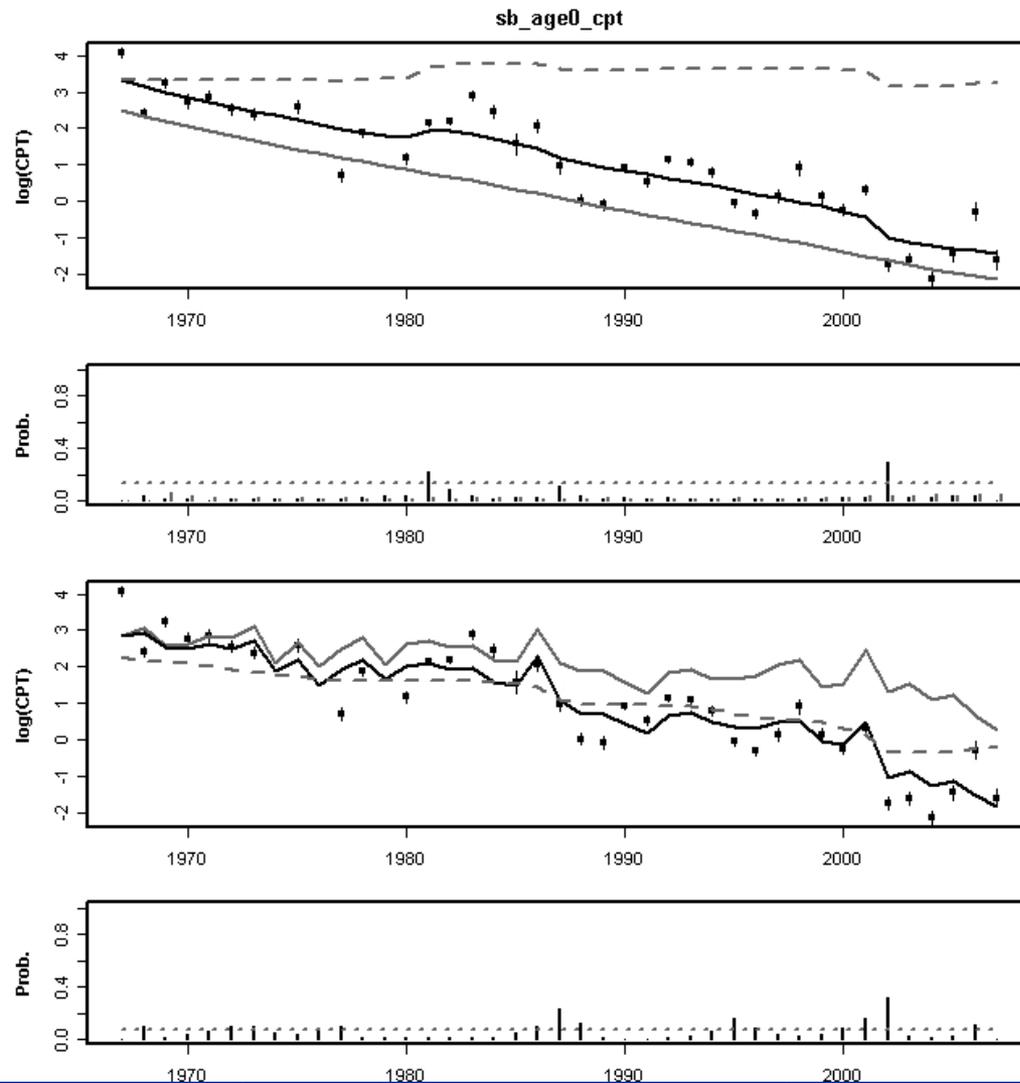
Delta Smelt



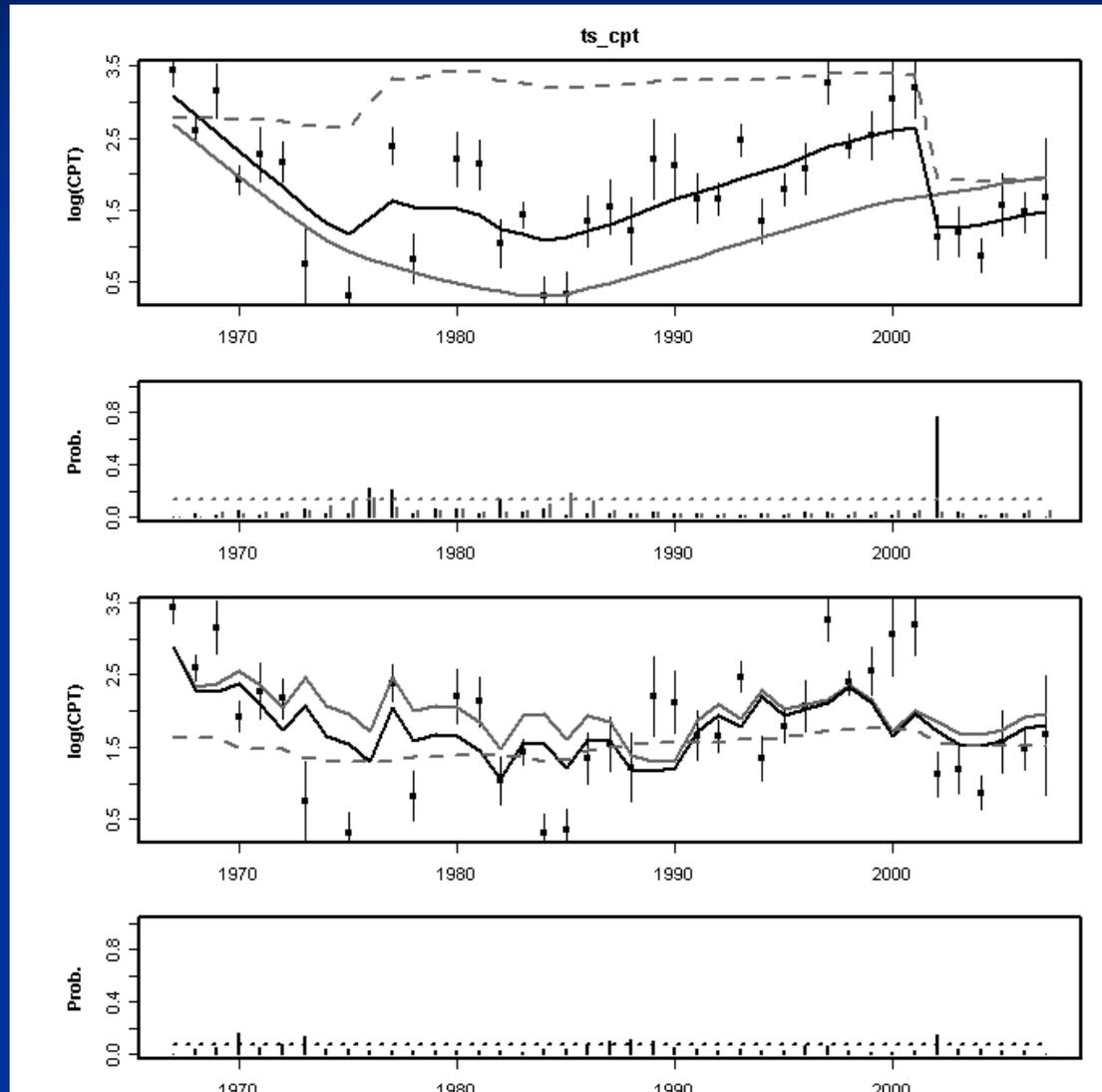
Longfin Smelt



Striped Bass



Threadfin Shad



Elements - Chemistry

- Obtained data from 2000 – 08
- Data sources
 - UC Davis RDC
 - TMDL, ILRP
 - BDAT
 - SWAMP
 - NPDES

Chemicals of Concern

- Initial list
 - chlorpyrifos, diazinon, diuron, bifenthrin, esfenvalerate/fenvalerate, lambda-cyhalothrin, permethrin, s-metolachlor, propanil, and copper
 - Very few data spatially and temporally
- Expanded list
 - Everything

Data Filtering

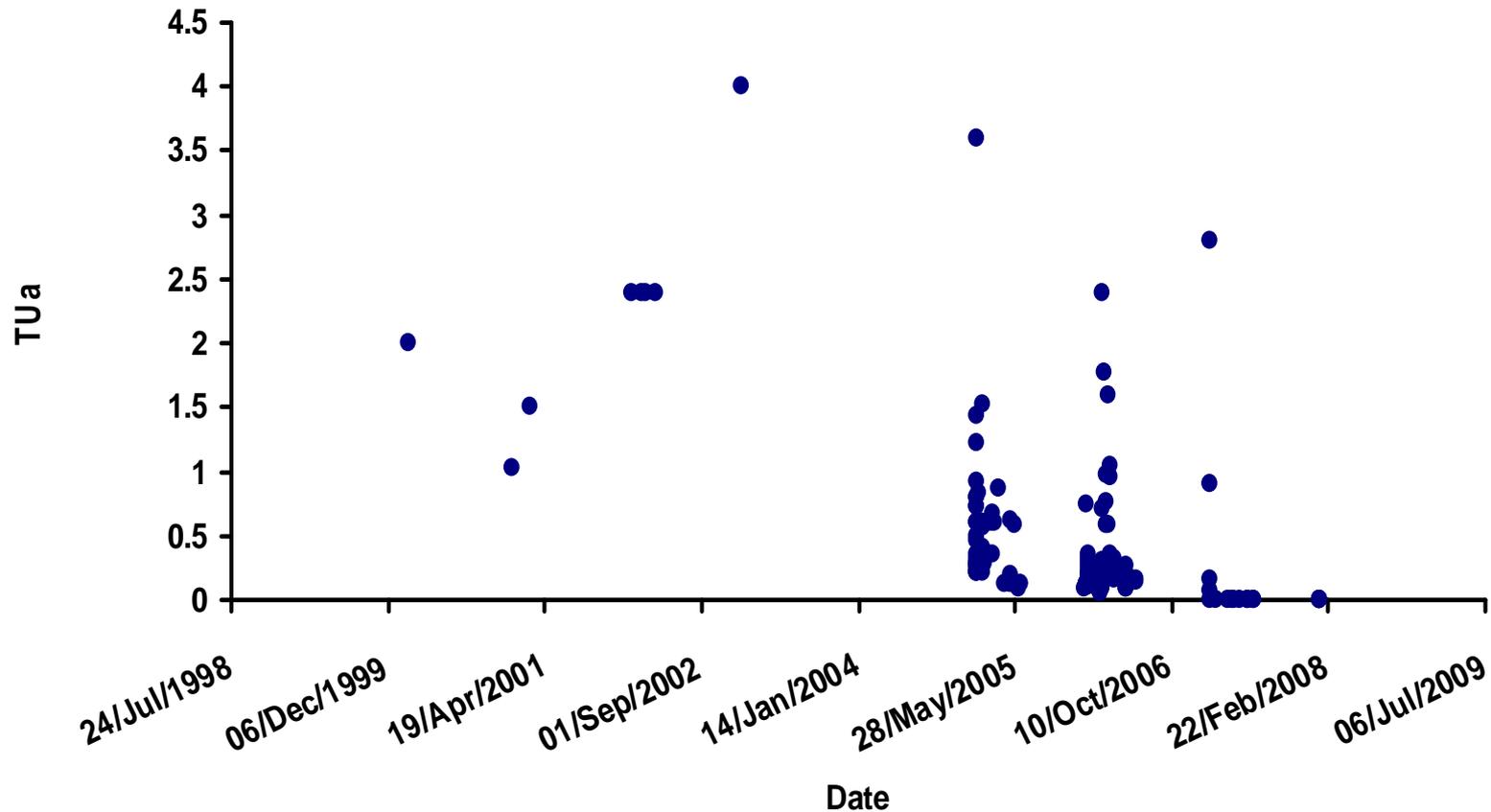
- Removed data with
 - No reporting or detection limits
 - No identifiable analyte name
 - No identifiable sample site location
 - Units of measure inconsistent with analyte
- Kept data with no QA information (e.g., dups, blanks, matrix spikes, LCS)

Most Common

Analyte Name	Start	End	Count
Selenium	10/3/1986	2/26/2008	12395
Boron	10/2/1995	8/30/2007	11872
Copper	3/7/1985	2/26/2008	2408
Ammonia	1/13/1999	1/17/2008	2081
Phosphorus as P	11/7/1999	6/21/2007	1642
Ammonia as N	11/7/1999	2/26/2008	1582
Zinc	9/4/1981	8/17/2007	1503
Sulfate	9/4/1981	2/16/2006	1472
Chromium	4/1/1991	8/17/2007	1282
Diazinon	11/7/1999	2/26/2008	1108
Nitrogen, Total Kjeldahl	2/25/1999	6/21/2007	1096
Chlorpyrifos	2/10/2000	2/26/2008	1032
Nitrate as N	11/7/1999	12/19/2007	1031

Chlorpyrifos

TUa for Chlorpyrifos 1998 - 2006



Common Issues

- Elevated detection limits
- Matrix information
- Sample treatment
- Ancillary data
- Spatial and temporal consistency

Elements - Toxicity

- Targeted 1998 – 1999 study
- WWTP ambient data
- ILRP monitoring
- POD studies
- Delta pyrethroid studies
 - Werner
 - Weston

Toxicity Tests: January - June

- 2001
 - None from January - June
- 2002
 - 70 water column
 - 120 sediment samples
- 2003-08
 - 1425 water column
 - 665 sediment

Common Issues

- No water quality data
- TIEs
- Spatial and temporal consistency
- Very little toxicity information available for POD species

Common Issues - Histopathology

- No primary data
- No data bases to review
- Limited species coverage
- No pathologies common across studies
- Difficulty in assigning causation to lesions

Conclusions - Data Quality/Quantity

- Most data unusable
 - Nonexistent or non-reported QA/QC
- Insufficient records spatially and temporally
 - Reliance on specific short-term studies
- Integration of data types difficult
 - No overlap spatially or temporally
- Improved methodology/research
 - Sample preservation and analysis